

REMARKS

Claims 9-33 are active in the present application.

Applicants wish to thank Examiner Stein for the helpful and courteous discussion with their undersigned Representative on August 18, 2003. The content of this discussion is expanded upon and is reflected in the following remarks. Applicants also wish to thank Examiner Stein for the indication that Claims 14, 15, and 21-30 are free of the art of record (paper number 14, page 4, paragraphs 8-9).

The rejections of Claim 9 under 35 U.S.C. §102(b) and of Claims 10-13 and 17 under 35 U.S.C. §103(a), each over Hartmann et al, are traversed.

The present invention provides, in part, a layer obtained by thermal treatment from an aqueous dispersion applied to a substrate, the dispersion containing a silicon/titanium mixed oxide powder prepared by flame hydrolysis and the titanium dioxide content of the powder is between 2 and 20 wt.% (see Claim 9).

Applicants note that Hartmann et al fail to disclose or suggest the presently claimed layer as set forth in Claim 9 and Claims 10-20, which are dependent therefrom. Specifically, Hartmann et al fail to disclose or suggest a silicon/titanium mixed oxide powder containing a titanium dioxide content of the powder is between 2 and 20 wt.%. In fact, Hartmann et al specifically disclose a "flame-hydrolytically produced titanium dioxide mixed oxide with a BET surface of 10 to 150 m²/g which contains 1 to 30% by weight aluminum oxide or 1 to 30% by weight silicon dioxide" (column 1, lines 38-42). From this disclosure, it is clear that Hartmann et al has a TiO₂ content of 70 to 99 wt% (see column 1, lines 38-42), and as such a layer containing 2 to 20 wt% of TiO₂ is neither anticipated nor obvious. Accordingly,

Applicants submit that Claim 9, and Claims 10-20 which are dependent therefrom, are free of the art of record and should be allowed.

The Examiner has maintained this rejection, in part, of Claims 9-13 and 17 over the disclosure of Hartmann et al. In maintaining this ground of rejection, the Examiner points to the table in column 1 at lines 47-60 of Hartmann et al and asserts that the titanium dioxide mixed oxide disclosed in the reference contains 20-90% rutile. However, this assertion by the Examiner appears to be a misinterpretation of the disclosure of Hartmann et al.

As stated above, Hartmann et al specifically disclose a "flame-hydrolytically produced titanium dioxide mixed oxide with a BET surface of 10 to 150 m²/g which contains 1 to 30% by weight aluminum oxide or 1 to 30% by weight silicon dioxide" (column 1, lines 38-42). From this disclosure, it is clear that Hartmann et al has a TiO₂ content of 70 to 99 wt% (see column 1, lines 38-42).

Further, Applicants note the following based on the table in column 1 of Hartmann et al to which the Examiner refers. Throughout the specification, Hartmann et al clearly specify that their titanium dioxide mixed oxide comprises either "Al₂O₃/TiO₂ mixed oxide *or* SiO₂/TiO₂ mixed oxide" (emphasis added, see column 2, lines 3-4). When referring to that table in column 1, then, it is clear that Al₂O₃ and SiO₂ are listed as *alternatives* in the titanium dioxide mixed oxide. Therefore, from the numbers in the table given in column 1, the following composition is obtained:

Al ₂ O ₃ <i>or</i> SiO ₂	1 to 30 wt%
Chloride	10 to <1 wt%

Balance:

TiO ₂	<i>at least 60 wt%</i>
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The standard for determining anticipation requires that the reference “must teach every element of the claim” (MPEP §2131). The titanium dioxide content of the mixed powder of the presently claimed invention ranges from 2 to 20 wt%. Hartmann et al fail to meet this standard and, as such, fails to anticipate the presently claimed invention.

The Examiner asserts that the titanium dioxide mixed oxide disclosed in Hartmann et al contains 20-90% rutile. Applicants don’t disagree that the rutile content is 20-90%; however, Applicants note that this percentage is a percentage of rutile within the titanium dioxide and is *not* a weight percentage within the total composition as interpreted by the Examiner. As set forth above, the titanium dioxide mixed oxide disclosed in Hartmann et al contains *at least 60 wt% of titanium dioxide*. Flame hydrolytically produced titanium dioxide usually exists in two different crystalline forms: rutile and anatase¹. Therefore, when the rutile content is 20-90% (as in Hartmann et al), the remaining 10-80% of the titanium dioxide is anatase.

For argument sake, if the Examiner’s apparent interpretation of the recited rutile content being a weight percentage were followed, the table is inherently flawed and is still incapable of anticipating and/or rendering obvious the present invention.

For example, if the table were read as the Examiner appears to interpret it without reference to the remainder of the Hartmann et al disclosure, this table only recites the inclusion of Al₂O₃, SiO₂, chloride, and rutile. Specifically, the maximum concentrations of the Al₂O₃, SiO₂, and chloride are: 30 wt% Al₂O₃, 30 wt% SiO₂, and 10 wt% chloride (total= 70 wt%). Therefore, at the maximum content of these components, the smallest concentration of rutile that may be present is 30 wt%. This example can be further played out when recognizing that Hartmann et al clearly state that Al₂O₃ and SiO₂ are alternatives. In

this scenario, the maximum concentrations of the Al_2O_3 , SiO_2 , and chloride are: 30 wt% of either Al_2O_3 or SiO_2 , and 10 wt% chloride (total= 40 wt%). Accordingly, in this scenario, at the maximum of these components, the smallest concentration of rutile that may be present is 60 wt%. In view of the foregoing exemplary scenarios, it is clear that a rutile content as low as 20 wt% is impossible, even when Hartmann et al is interpreted as the Examiner has alleged.

Not only do Hartmann et al fail to meet the standard for determining anticipation as defined in MPEP §2131, this reference can not even support a *prima facie* case of obviousness as the requirement for at least 60 wt% titanium dioxide in the titanium dioxide mixed oxide disclosed in Hartmann et al would teach the artisan away from the claimed content of 2 to 20 wt%. The Examiner is reminded that MPEP § 2141.02 states: "prior art must be considered in its entirety, including disclosures that teach away from the claims". When this teaching away is considered, Hartmann et al clearly fails to anticipate and/or render obvious the present invention.

For all the foregoing reasons, Applicants respectfully request withdrawal of the rejections over Hartmann et al.

The rejection of Claims 11 and 12 under 35 U.S.C. §112, second paragraph, is obviated by appropriate amendment.

Applicants wish to acknowledge the Examiner for bringing their attention to the typographical error in Claims 11 and 12 in which "pm" was inadvertently inserted in place of the appropriate " μm ." Applicants have amended Claims 11, 12, 23, and 24 to provide the

¹ See attached copies of: (a) page 9, U.S.D.O.E., Aqueous Electrochemical Mechanisms in Actinide Residue Processing (Final Report); (b) AEROXIDE® TiO_2 P25 product description (Degussa); and (c) Kim et al, *Advanced Engineering Materials*, (2002) 4:7, 494-496.

proper units. Support for this amendment is provided by page 4, lines 1-3 of the English translation.

Withdrawal of this ground of rejection is respectfully requested.

Applicants note that MPEP §821.04 states:

...if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim will be rejoined.

Applicants respectfully submit that should the claims that correspond to the elected group (Claims 9-17 and 21-30) be found allowable, non-elected process claims (Claims 18-20 and 31-33) that depend from the elected composition claims should be rejoined.

Applicants wish to thank the Examiner for the indication to their undersigned Representative that these claims would be rejoined (see paper number 14, page 2, paragraph 3).

Finally, regarding submission of a certified copy of the priority application DE 101 63 939.2, Applicants will submit the same prior to payment of the Issue Fee.

Applicants submit that the present application is in condition for allowance. Early notification to this effect is respectfully requested.

Respectfully submitted,

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